

COPRA[®] MetalBender

SheetMetal Lofting • Standard Transitions • Sheet Metal Part Library
Powerful Flat Pattern Calculation • For Inventor[®]



COPRA®

MetalBender TD-i

Application for
Inventor®

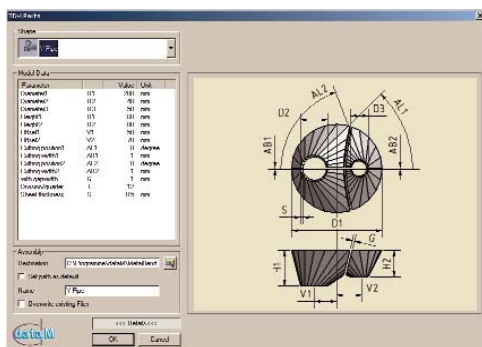
data M Software sheet metal technology is integrated into the Autodesk Inventor® functionality for sheet metal part design. Many powerful sheet metal features are already available for the professional designer. To enhance the existing design features and as an addition to the already existing technology for press brakes data M now also offers a solution for transitions, e. g. for HVAC applications.

The **COPRA® MetalBender TD-i** is very easy to use and takes into account the specific requirements of sheet metal parts.

All in One

- Extensive library containing standard sheet metal parts for HVAC applications
- Automatic creation of standard transitions circular-rectangular-rounded
- Special features for designing any contours – SheetMetal Lofting
- Powerful flat pattern calculation for rounded and sharp-edged sheet metal parts with **COPRA® MetalBender Analyser-i**

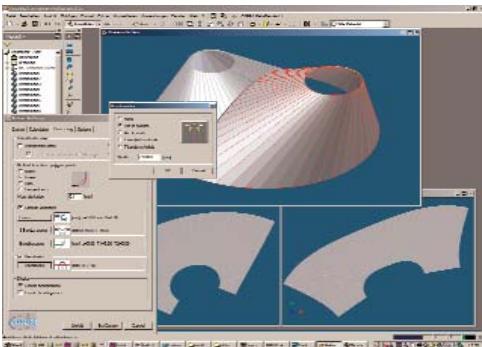
Sheet Metal Part Library



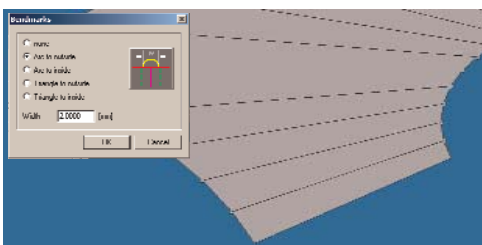
The **TD-i library** consists of standard parts as used in HVAC applications. All sheet metal parts are precisely calculated on a parametric basis as are the intersections of more than one sheet metal part. You can select the parts from a clearly designed catalogue. The parameters offered are shown in sketches making classification very easy.

Previewing parameters can be switched on or off. The designer is able to work within the design context. **COPRA® MetalBender TD-i** has the following characteristics:

- Automatic creation of sheet metal parts
- All designed parts are fully parametric
- Automatic creation of the corresponding assembly
- Flat pattern calculation for each individual part
- All parameters of the flat pattern calculation for each individual part are pre-set.
- Position of bend lines can be marked



For example, all kinds of combinations of intersections concerning cylindrical parts and conii can be created with the standard transition command. The **TD-i library** is ready to use from the very first minute due to its easy handling, correct parameter settings, automatic creation of sheet metal parts and pre-set calculation parameters. All this results in a very short amortisation period.



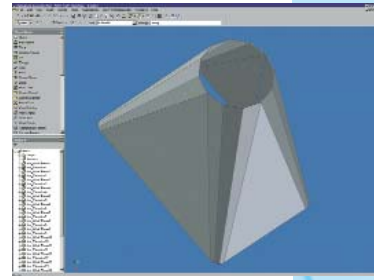
The following parts are available:

- Y-pipe
- Segment elbow
- Transition with offset
- Cylindrical pipe with rectangular branch
- Dished boiler end with horizontal branch pipe
- Ventilator cowl
- Conus with cylinder
- Pyramid with cylinder
- Pipe branch with cone
- Pipes
- Dished boiler end with circular base
- Pipe with oval branch
- Transition

Standard transitions

All kinds of combinations of circular, rectangular or rounded transitions can be selected from a clearly designed dialogue window and they are subsequently automatically created as bendable parts.

Sharp-edged transitions can also be easily combined with rounded flanges.



SheetMetal Lofting

For heating, air-conditioning and ventilation applications it is often necessary to design 3D parts consisting of two different contours. Autodesk Inventor offers a lofting feature for this purpose.

However, models that are created with this feature cannot be unfolded as the Inventor lofting command does not result in creating a bendable part. For production it is, however, essential to have a precise flat pattern calculated. data M Software now offers a unique new solution for this requirement: the **SheetMetal Lofting feature**.

The procedure is comparable to the standard lofting command in Inventor. It differs however in the very fact that it takes the specific requirements of sheet metal parts into account.

The user will – in any case – get a truly bendable part based on sheet metal technology. Step by step the integrated dialogue assistant leads the user to the final desired result. All parts that have been designed with the SheetMetal Lofting feature can be modified by using Inventor® commands and are later unfolded with COPRA® MetalBender Analyser-i.

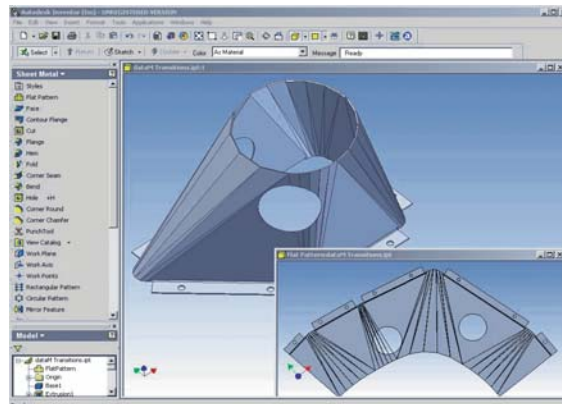
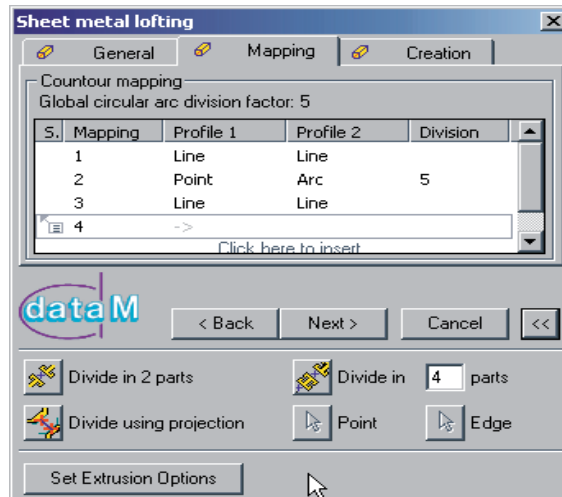
SheetMetal Lofting design approach:

Step 1: Design of boundary contours

First the two boundary contours (2D contours) are created with Inventor® functionality.

The following parameters can be defined:

- Selection of the boundary contours
- Definition of the cutting gap width
- Position of cutting gap on contours
- Standard setting for number of bending edges of an arc
- Automatic division of contours, e.g. of a circle



Step 2: Bending lines

In the second step the user determines the positions of the bending lines. The corresponding elements are clearly shown in a dialog box and can be modified at a later stage.

Step 3: Calculation of 3D solid

A 3D solid is now calculated according to the defined parameters.

The following definitions can now also be made:

- Material thickness (sheet metal thickness)
- Creation of a surface or solid model
- Definition of direction into which the solid is to be extruded

Result:

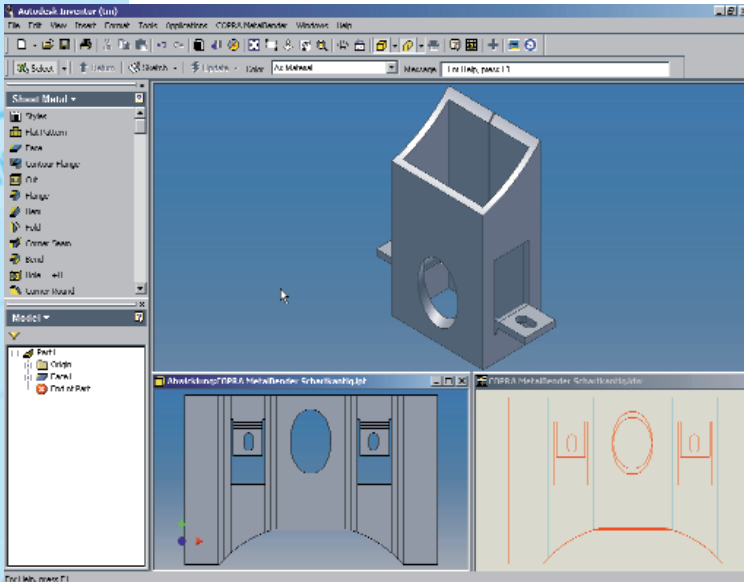
- Bendable part according to sheet metal know-how and technology
- All essential bending lines are included
- Reworking with Inventor® possible
- Flat pattern calculation with CMB Analyser-i

COPRA®

MetalBender Analyser-i

Precise, made-for-manufacture flat pattern calculation of sharp-edged 3D solids and imported sheet metal parts in Inventor®

Application for
Inventor®



Thanks to its **100 % integration** and full compatibility to other **Inventor® applications** the COPRA® MetalBender Analyser-i adjusts perfectly to the Inventor environment and eliminates the need for additional training.

Precise flat pattern calculation at press button: the new **COPRA® MetalBender Analyser-i**. Now you can unfold the solids you designed sharp-edged or imported into the new CAD system **Inventor®** with manufacture in mind – without the need for re-working your solids. COPRA® MetalBender Analyser-i is the logical enhancement of the flat pattern calculation already existing in Inventor®, which is also based on data M Software sheet metal engineering technology.

No matter whether you have designed your solids in a sharp-edged, rounded or combined sharp-edged/rounded way: COPRA® MetalBender Analyser-i calculates the flat pattern precisely **in just a matter of seconds**. The automatic corner and bending zone relief cut, the unfolded length which is based on the mode of calculation you select, the bending angles as well as the overbend angles, which are calculated in such a way that the material characteristic spring back effect is taken into account, are all analysed **absolutely precisely** and reliably in the automatic unfolding. The result is later optimised by means of the automatic **intersection point optimisation** for laser cutting. A DXF file is then written and the resulting data can now be transferred to the laser or punch machine via **state-of-the-art bending technology**.

- Flat pattern calculation directly inside the Inventor workflow, no external add-on package, no need for data conversion
- Unfolding of solids created inside Inventor®
- Unfolding of sharp-edged transitions
- Automatic unfolding with or without bending technology (Calculation of the shortening factor)
- Shown in the unfold window in Inventor® and exportable as a separate design
- XY dimensions as Inventor parameters
- Corner and bending zone relief cuts
- Interface for Cybelec / Delem / ToPs
- Transfer as DXF file to NC programs
- Calculation mode according to DIN, machine data and position of the neutral line
- Automatic calculation of the overbend angles taking the material's spring-back characteristics into account (can be chosen according to various methods)
- Intersection point optimisation for laser manufacture can be selected
- Smoothing of the unfolding
- Automatic corner recognition also for solids imported from other CAD systems
- Associativity solid-unfolding